

ON-CHIP DYNAMIC BUFFER LEVEL  
INDICATORS FOR DIGITAL VIDEO ENCODER

Abstract of the Disclosure

Method and encoder for encoding a digital video  
5 image stream. The encoding includes spatial  
compression of still images in the video stream and  
temporal compression between the still images. The  
spatial compression is carried out by converting a  
time domain image of a macroblock to a frequency  
10 domain image of the macroblock, taking the discrete  
cosine transform of the frequency domain image,  
transforming the discrete cosine transformed  
macroblock image by a quantization factor, and run  
length encoding the quantized discrete cosine  
15 transformed macroblock image. The temporal  
compression is carried out by reconstructing the run  
length encoded, quantized, discrete cosine  
transformed image of the macroblock, searching for a  
best match macroblock, and constructing a motion  
20 vector between them. This forms a bitstream of run  
length encoded, quantized, discrete cosine transform  
macroblocks and of motion vectors. This bitstream is  
passed to and through an external buffer to a  
transmission medium. The number encoded bits read by  
25 a host from the external buffer is fed back to the  
encoder for calculation in real time of a dynamic  
buffer level indicator indicative of the fullness of  
the external buffer. The encoder may generate a  
BUFFER\_EMPTY flag, BUFFER\_ALMOST\_FULL flag and/or  
30 BUFFER\_FULL flag for the host.